

Amendments to the Claims:

The following listing of claims will replace any/all prior versions, and listings, of claims in the application, wherein additions are shown in underlined text and deletions are shown in strike-out text:

1-16. (Canceled).

17. (Previously Presented) A process for the selective dimerization of a lower alkene to a C₆-C₁₂ alkene, which process comprises contacting, under catalytic distillation conditions, the lower alkene with a catalytic composite comprising:

a) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m²/g to 500 m²/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body; and

b) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure.

18. (Original) The process according to claim 17, wherein the lower alkene is selected from 1-butene, 2-butene and isobutene, and the C₆-C₁₂ alkene is selected from trimethylpentene, n-octene, dimethylhexene and methylheptene.

19. (Previously Presented) The process according to claim 17, wherein the catalytic composite is admixed with inert distillation packing.

20. (Original) The process according to claim 19, wherein the ratio of the catalytic composite to inert distillation packing is from 10:1 to 1:10.

21. (Original) The process according to claim 19, wherein the catalytic composite and inert distillation packing are used in separate zones of the catalytic distillation column.

22. (Original) The process according to claim 17, wherein the lower alkene is a C₄ alkene and the C₆ to C₁₂ alkene is predominantly a C₈ alkene.

23. (Original) The process according to claim 22, wherein the C₈ alkene is a trimethylpentene.

24-29. (Canceled).

30. (Currently Amended) A process for preparing high octane compounds, the process comprising:

a) contacting, under catalytic distillation conditions to obtain a C₆ to C₁₈ alkene, a C₂ to C₆ alkene with a first catalytic composite, the first catalytic composite comprising:

(i) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m²/g to 500 m²/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body, and

(ii) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure; and

b) contacting, under catalytic distillation conditions to obtain a C₆ to C₁₈ alkane, the C₆ to C₁₈ alkene from step a) with a second catalytic composite and hydrogen, the second catalytic composite comprising:

(i) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m²/g to 500 m²/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body, and

(ii) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure, and a ligand comprising one or

more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus.

31. (Original) The process according to claim 30, wherein the process steps a) and b) are carried out in a single catalytic distillation column.

32. (Original) The process according to claim 30, wherein the process steps a) and b) are carried out in separate catalytic distillation columns.

33. (Previously Presented) The process according to claim 30, wherein the C₂ to C₆ alkene is a C₄ alkene and the C₆ to C₁₈ alkene is a C₈ alkene.

34. (Original) The process according to claim 33, wherein the C₈ alkene is trimethylpentene.

35. (Canceled).

36. (Previously Presented) A process for the production of C₆-C₁₈ alkenes, which process comprises contacting, under catalytic distillation conditions, a mixture of C₂-C₆ alkenes with a catalytic composite comprising:

- a) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m²/g to 500 m²/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body; and
- b) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure.

37. (Original) A process according to claim 36, wherein each C₂-C₆ alkene in the mixture is oligomerized within different reactive zones found in a single catalytic distillation column.

38. (Original) A process according to claim 36, wherein each C₂-C₆ alkene is oligomerized within different reactive zones found in two or more linked catalytic distillation column.

39. (Previously Presented) A process according to claim 36, wherein the mixture of C₂-C₆ alkenes comprises one or more C₄ alkenes.

40. (Previously Presented) A process for the selective oligomerization of a lower alkene to a C₆-C₁₈ alkene, which process comprises contacting, under catalytic distillation conditions, a mixture of C₂ to C₆ alkenes and C₁ to C₆ alkanes with a catalytic composite comprising:

- a) a support structure, made of a non zeolite inorganic oxide, having a void fraction ranging from 0.30 to 0.95 and a surface area of from 40 m²/g to 500 m²/g, the support structure having a shape selected from a ring, a hollow cylinder, a cross or multi partition ring or cylinder with 2, 3, or 4 cell partitions, a saddle, a solid ring, a solid cylinder, a sphere, and a honeycomb body; and
- b) from 0.01 to 10% by weight of a catalytically active species comprising a group VIII metal, based on the weight of the catalytic composite, which is deposited on the support structure.

41-47. (Canceled).

48. (Previously Added) The process according to claim 17, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ -alumina and α -alumina.

49. (Previously Added) The process according to claim 17, wherein the support structure is in the shape of a Raschig ring.

50. (Currently Amended) The process according to claim 17, wherein the group VIII metal is nickel, ~~palladium, platinum or rhodium.~~

51. (Previously Added) The process according to claim 17, wherein the group VIII metal is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a metal acetate, or in the form of a metal complex.

52. (Previously Added) The process according to claim 17, wherein the catalytically active species is nickel sulphate or nickel chloride.

53. (Currently Amended) The process according to claim 17, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or ammonium phosphate.

54. (Currently Amended) The process according to claim 17, wherein the catalytically active species comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, and wherein the group VIII metal is in the zero oxidation state.

55. (Previously Added) The process according to claim 30, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ -alumina and α -alumina.

56. (Previously Added) The process according to claim 30, wherein the support structure is in the shape of a Raschig ring.

57. (Currently Amended) The process according to claim 30, wherein the group VIII metal in the first catalytic composite is nickel, ~~palladium, platinum or rhodium~~.

58. (Currently Amended) The process according to claim 30, wherein the group VIII metal in the first catalytic composite is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a metal acetate, or in the form of a metal complex.

59. (Currently Amended) The process according to claim 30, wherein the catalytically active species in the first catalytic composite is nickel sulphate or nickel chloride.

60. (Currently Amended) The process according to claim ~~30~~58, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or ammonium phosphate.

61. (Currently Amended) The process according to claim 30, wherein the catalytically active species in the first catalytic composite comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, ~~and wherein the group VIII metal is in the zero oxidation state.~~

62. (Previously Added) The process according to claim 36, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ -alumina and α -alumina.

63. (Previously Added) The process according to claim 36, wherein the support structure is in the shape of a Raschig ring.

64. (Currently Amended) The process according to claim 36, wherein the group VIII metal is nickel, ~~palladium, platinum or rhodium.~~

65. (Previously Added) The process according to claim 36, wherein the group VIII metal is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a metal acetate, or in the form of a metal complex.

66. (Previously Added) The process according to claim 36, wherein the catalytically active species is nickel sulphate or nickel chloride.

67. (Currently Amended) The process according to claim ~~36~~65, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or ammonium phosphate.

68. (Currently Amended) The process according to claim 36, wherein the catalytically active species comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, ~~and wherein the group VIII metal is in the zero oxidation state.~~

69. (Previously Added) The process according to claim 40, wherein the inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia and mixtures thereof, preferably from γ -alumina and α -alumina.

70. (Previously Added) The process according to claim 40, wherein the support structure is in the shape of a Raschig ring.

71. (Currently Amended) The process according to claim 40, wherein the group VIII metal is nickel, ~~palladium, platinum or rhodium.~~

72. (Previously Added) The process according to claim 40, wherein the group VIII metal is in the form of a metal salt, preferably a metal sulphate, a metal phosphate, a metal oxalate or a metal acetate, or in the form of a metal complex.

73. (Previously Added) The process according to claim 40, wherein the catalytically active species is nickel sulphate or nickel chloride.

74. (Previously Added) The process according to claim 40, wherein the metal salt is in an ionic state and the catalytically active species is in admixture with ammonium sulphate or ammonium phosphate.

75. (Currently Amended) The process according to claim 40, wherein the catalytically active species comprises a group VIII metal and a ligand, wherein the ligand comprises one or more atoms selected from the group consisting of carbon, hydrogen, oxygen, nitrogen and phosphorus, ~~and wherein the group VIII metal is in the zero oxidation state.~~

76. (New) The process according to claim 30, wherein the group VIII metal in the second catalytic composite comprises a Group VIII metal which is in the zero oxidation state.

77. (New) The process according to claim 30, wherein the Group VIII metal in the second catalytic composite comprises palladium, platinum or rhodium.